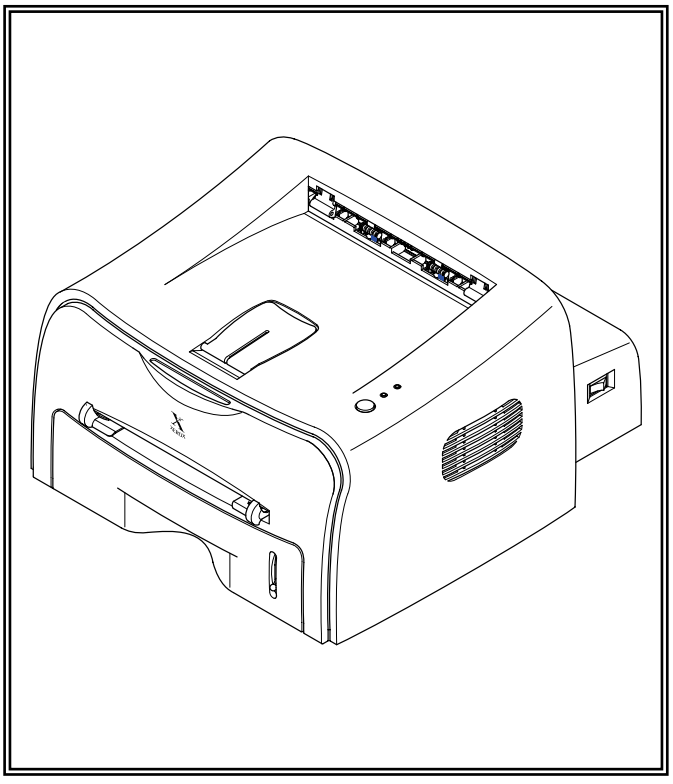
LASER PRINTER

Phaser 3120
Phaser 3130

SERVICE *Manual*

LASER PRINTER



CONTENTS

1. Precautions
2. Specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. Exploded Views and Parts List
6. Block Diagram
7. Connection Diagram
8. Schematic Diagram

1. Precautions

The cautions in the below are items needed to keep in mind when maintaining and servicing.
Please read carefully and keep the contents in mind to prevent accidents while servicing and to prevent that the machine gets damage.

1.1 Warning for safety.

(1) Request the service by qualified service person.
The service for this machine must be performed by a service person who took the additional education of this field.
It is dangerous if unqualified service person or user tries to fix the machine.

(2) Do not rebuild it discretionary.
Do not attach or change pats discretionary. Do not dissemble, fix, and rebuilt it. If do, printer will abnormally work and electric shock or a fire can be occurred.

(3) Laser Safety Statement
The Printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class 1(1) laser products, and elsewhere, is certified as a Class I laser product conforming to the requirements of IEC 825.
Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Warning >> Never operate or service the printer with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes. When using this product, these basic safety precautions should always be followed to reduce risk of fire, electric shock, and injury to persons.

CAUTION - INVISIBLE LASER RADIATION WHEN THIS COVER OPEN. DO NOT OPEN THIS COVER.

VORSICHT - UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GE FFNET. NICHT DEM STRAHL AUSSETZEN.

ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS D OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.

ATTENZIONE - RADIAZIONE LASER INVISIBILE IN CASO DI APERTURA. EVITARE L ESPOSIZIONE AL FASCIO.

PRECAUCION - RADIACION LASER IVISIBLE CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.

ADVARSEL. - USYNLIG LASERSTR LNING VED BNING, N R SIKKERHEDSBRYDERE ER UDE AF FUNKTION. UNDG UDSAETTELSE FOR STR LNING.

ADVARSEL. - USYNLIG LASERSTR LNING N R DEKSEL PNES. STIRR IKKE INN I STR LEN. UNNG EKSPONERING FOR STR LEN.

VARNING - OSYNLIG LASERSTR LNING N R DENNA DEL R PPNAD OCH SP RREN R URKOPPLAD. BETRAKTA EJ STR LEN. STR LEN R FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA N KYM TT M LLE LASER-S TEILYLLE L KATSO S TEESEEN.

注 意 - 严禁渴开此盖, 以免激光泄露灼伤

주 의 - 이 덮개를 열면 레이저광에 노출될 수 있으므로 주의하십시오.

1.2 Caution for safety

1.2.1 Precaution related noxious material

The toner in a printer cartridge contains a chemical material, which might harm human body if it is swallowed. Please keep children out of the toner cartridge.

1.2.2 Precaution related electric shock or fire

It is possible to get electric shock or burn by fire if you don't fallow the instructions of the manual.

(1) Use exact voltage. Please do use an exact voltage and wall socket. If not, a fire or an electric leakage can be caused.
(2) Use authorized power code. Do use the power code supplied with PRINTER. A fire can be occurred when over current flows in the power code.
(3) Do not insert many codes in an outlet. If do, a fire can be occurred due to flow over current in an outlet.
(4) Do not put water or extraneous matter in the PRINTER. Please do not put water, other liquid, pin, clip, etc. It can cause a fire, electric shock, or malfunction. If it is happened, turn off the power and remove the power plug from outlet immediately.
(5) Do not touch the power plug with wet hand. When servicing, do remove the power plug from outlet. And do not insert or take off it with wet hand. Electric shock can be occurred.
(6) Caution when inserting or taking off the power plug. The power plug has to be inserted completely. If not, a fire can be caused due to poor contact. When taking off the power plug, do grip the plug and take it off. If grip the line and pull over, it could be damaged. A fire or electric shock could cause.
(7) Management of power code. Do not bend, twist, or bind it and place other materials on it. Also, do not fix it with staples. If the power code gets damage, a fire or electric shock can be caused. A damaged power code must be replaced immediately. Do not repair the damaged part and reuse it. A repaired part with plastic tape can be occurred a fire or electric shock. Do not spread chemicals on the power code. Do not spread insecticide on the power code. A fire or electric shock can be occurred due to thinner(weak) cover of the power code.
(8) Check whether the power outlet and the power plug are damaged, pressed, chopped, or blazing fire or not. When such inferiorities are found, repair it immediately. Do not make it pressed or chopped when moving the machine.
(9) Caution when thundering, and being flash of lightening. It causes a fire or electric shock. Take the power plug off when thundering. Do not touch cable and device when thundering and being flash of lightening.
(10) Do avoid the place where is moisture or has dust. Do not install the printer in where have lots of dust or around humidifier. A fire can be occurred. A plug part need to clean well with dried fabric to remove dust. If water drops are dripped on the place covered with dust, a fire can be occurred.
(11) Avoid direct sunlight. Do not install the printer near to window where directly contacts to the sunlight. If the machine contacts sunlight long time, the machine cannot work properly because inner temperature of the machine is getting higher. A fire can be caused.
(12) Turn off the power and take off the plug when a smoke, strange smell, or sound from the machine. If you keep using it, a fire can be occurred.
(13) Do not insert steel or metal piece inside/outside of the machine. Do not put steel or metal piece into a ventilator. An electric shock could be happened.

1.2.3 Precaution related handling the machine.

If you ignore this information, you could get harm and machine could be damaged.

(1) Do not install it on the different levels, or slanted floor.
Please confirm whether it is balanced or not after installation. If it is unbalanced, an accident can be happened due to the machine fell over.
(2) Be careful not to insert a finger or hair in the rotating unit.
Be careful not to insert a finger of hair in the rotating unit (motor, fan, paper feeding part, etc) while the machine is operating. Once it happens, you could harm.
(3) Do not place a pot contains water/chemical or small metals. If those are got into the inner side of machine, a fire or electric shock can be occurred.
(4) Do not install it in where lots of moisture or dust exists or where raindrop reaches. A fire or electric shock can be caused.
(5) Do not place a candlelight, burning cigarette, and etc. on the machine. Do not install it near to heater. A fire can be occurred.

1.2.4 Precaution when assembly/disassembly

When replace parts, do it very carefully. Do memorize the location of each cable before replace parts for reconnecting it afterwards. Do memorize. Please perform the below before replace or disassembly the parts.

(1) Check the contents stored in the memory. All the information will be erased after replace main board. The information needed to keep has to be written down.
(2) Before servicing or replacing electric parts, take off a plug.
(3) Take off printer cables and power code connected to printer.
(4) Do use formal parts and same standardized goods when replacing parts.Must check the product name, part code, rated voltage, rated current, operating temperature, etc.
(5) Do not give an over-force when release or tighten up the plastic parts.
(6) Be careful not to drop the small parts such as screws in the printer.
(7) Be careful not to change the location of small parts such as screws when assembling and disassembling.
(8) Do remove dust or foreign matters completely to prevent fire of tracking, short, or etc.
(9) After finished repair, check the assembling state whether it is same as before the repair or not.

1.3 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called “Electrostatically Sensitive (ES) Devices”, or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor “chip” components.
The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

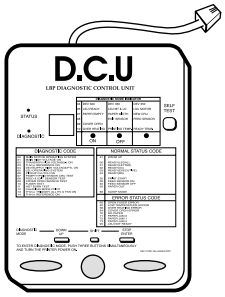
Caution >>Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.
3. Use only a grounded tip soldering iron to solder or desolder ESDs.
4. Use only an “anti-static” solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.
5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.
7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.
9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one’s foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

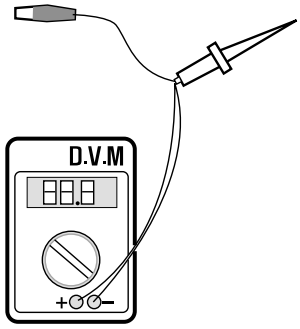
1.4 Tool for Troubleshooting

The following tools are recommended for safe and smooth troubleshooting described in this service manual.

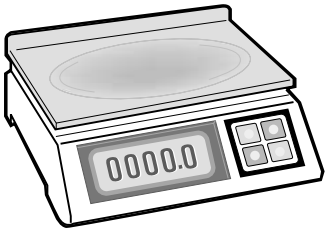
1 DCU(Diagnostic Control Unit)
Standard : Test equipment to diagnose the Laser printer supplied by Samsung Electronics.



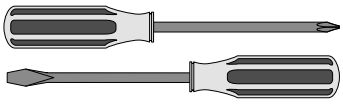
2 DVM(Digital Volt Meter)
Standard : Indicates more than 3 digits.



3 Electronic Scale
Standard : Equipment to check the weight of consumables(toner cartridge) supplied by Samsung Electronics. (The gram unit can be measured.)



4 Driver
Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).

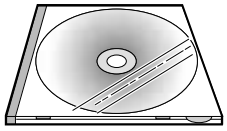


5 Pinset
Standard : For general home use, small type.

6 Cotton Swab
Standard : For general home use, for medical ser-vice

7 Cleaning Equipments a IPA(Isopropyl Alcohol)dry cloth or a soft stuff neutral detergent

8 Software(Driver) installation CD ROM



Mind your hands not to be touched when you disassemble and reassemble PBA ASS'Y, such as the main board, SMPS, HVPS.

2. Specifications

2.1 General Specifications

ITEM	DESCRIPTION
Print Technology	Non-impact Electro-photograpic Printing
Developing system	Non-Magnetic, Mono-Component Developing System
Print Speed(1)	16 PPM : A4 size , 5% Character pattern
	17 PPM : Letter size , 5% Character pattern
Resolution	Phaser 3120 : True 600 X 600 DPI
	Phaser 3130 : 1200 X 600 DPI
Source of Light	Laser diode (LSU : Laser Scanner Unit)
Warm-Up Time	Power-on boot : 30 seconds or less
First Print Out Time	Less than 11 seconds (Ready to 1st page out)
Media Size	75 X 125 (3" X 5") mm to 216 X 356 (8.5" X 14")mm
Media Thickness	16 ~ 24 lb
Dimension(W X D X H)	348 X 355 X 193mm / 13.7 X 14 X 7.6 inch
Weight	Net : 7 Kg /15.4 lb
	Gross : 9.5 Kg (Max.)
Acoustic Noise(1)	Stand by : Less than 35 dB
	Printing: Less than 50 dB
Machine Life	120,000 Sheets
Periodic Replacing Parts(2)	Pick Up Roller : 60,000 Sheets
	Feed Roller : 60,000 Sheets
	Transfer Roller: 60,000 Sheets
	Fuser Assembly : 60,000 Sheets

(1) For measuring the printing speed, count the papers which outputted within one minute from when the second page starts to be printed. (A4, 5% character pattern standard)

(2) The life span of the consumption parts can be checked by printing the demo page or the system list. (Refer to the 6.3 Receive the service information)

2.2 Controller Specification

ITEM	DESCRIPTION	
	Phaser 3120	Phaser 3130
Processor(CPU)	Samsung Jupiter4 90MHz	Samsung SPGPm 166MHz
OS Compatibility(1)	Win 98x/NT4.0/ME/2000/XP, Various Linux OS,Mac(Mac OS 8.6 ↑)	
Memory	FLASH ROM(PROGRAM) : 0.5MB flash	
	RAM : 8 MB	RAM : 32 MB
	EEPROM(NVRAM) : 512byte	
Emulation	SPL(Samsung Printer Language)	PCL6, IBMProPrinter, EPSON
Interface	USB 1.1	USB - USB 2.0 - 12 Mbps 1 port Parallel : IEEE 1284 - Modes supported : Compatible,Nibble,Byte,ECP External Network Adaptor(Optional)
Interface switching	Automatic	
Interface time-out	5min(Max.)	
Font	Windows Font	45 Scalable, 1 Bitmap

(1) The SPL series model is USB exclusive use, so it supports the environment beyond the WIN 98.

2.3 Electrical Specification

ITEM	DESCRIPTION	
Input Voltage	Nominal input voltage	200-240 VAC / 100~127VAC
	Input voltage range	189-264 VAC/ 90~132VAC
	Nominal frequency	50/60 Hz
	Frequency tolerance	+3Hz
Power Consumption	Printing : 280W Avg or less	Power Save : 10W Avg or less

2.4 Environmental Range

ITEM	OPERATING	STORAGE
Temperature	10~32 °C(50-90 oF)	-20~40 °C (-4~104 oF)
Humidity	20~80%RH	10~80%RH

2.5 TONER Cartridge (Developer)

ITEM	DESCRIPTION	REMARK
Life span	3,000 sheets	IDC 5% pattern
Developing	Non-magnetic Mono Conponent Contact Developing	
Charging	Conductive Roller Charging	
Toner checking sensor	Not Available	
Ozone	0.1PPM or less	8 hours
Style	Single cartridge	

2-Paper Handling Specifications

Please refer to "**Paper Specifications**" on user guide

• Input Paper Size

PAPER	DIMENSIONS	WEIGHT
A4	210 X 297 mm	60 to 90 g/m² bond(16 to 24 lb)
Letter	216 X 279(8.5 X 11")	
Legal(Legal14")	216 X 356(8.5 X14")	
JIS B5	182 X257mm (7.2 X 10")	
Folio(Legal13")	216 X 330mm (8.5 X 13")	
Minimum size (Custom)	76 X 127mm (3 X 5")	60 to 163 g/m² bond(16 to 43 lb)
Maximum size (Custom)	216 X 356mm (8.5 X 14")	
Transparency(OHP)	Same minimum and maximum	Thickness:
Label paper	sizes as listed above	0.10 X 0.14 mm (0.0039 X 0.0055")
Envelopes		Up to 90 g/m² bond(16 to 24 lb)

• **Input capacity**
Cassette: 250 sheets
Manual : 1 sheet

• **Output capacity**
Face Down : 50 sheets(20lb)
Face Up : 1 sheet(OHP, Lavbel, Cut Sheet, Envelope)